

The Impact of Information and Communication Technology (ICT) tools on the Business Functions: A Study on Tour Operating Firms

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ABSTRACT

Tourism industry has been viewed as an information intensive industry (Sheldon, 1997). Globalization has drastically changed the tourism industry. ICT has accelerated the process of globalisation in tourism industry by offering efficient tools for the vendors in developing, operating and distributing their products and services worldwide (Buhalis, 2003). The post-globalization era has made a turnaround impact in altering the social and the economic structure. These changes are attributed to the advent and the adoption of ICT (Information and Communication Technology). Unlike other industries, the diffusion of the ICT in tourism industry is significantly more because of the worldwide operations. This paper aims at finding the level of ICT adoption in tour operations, and the relationship between the ICT applications and tools with the business functions.

1. Introduction

Tourism industry has been viewed as an information intensive industry (Sheldon, 1997). Globalization has drastically changed the tourism industry. ICT has accelerated the process of globalisation in tourism industry by offering efficient tools for the vendors in developing, operating and distributing their products and services worldwide (Buhalis, 2003). The post-globalization era has made a turnaround impact in altering the social and the economic structure. These changes are attributed to the advent and the adoption of ICT (Information and Communication Technology). Unlike other industries, the diffusion of the ICT in tourism industry is significantly more because of the worldwide operations. According to Hoffman (1994), the ICT has altered the structure of the industry and offers a range of tools and applications, giving an unprecedented opportunity for development of their market base and expand their operations globally.

The tourism industry is dynamic and is inclined to changes and is affected by numerous external factors in the business environment (Díaz, Martín-Consuegra, & Esteban, 2015; Sigala & Chalkiti, 2014). In this context, the tourism firms have to be proactive in addressing the tourism demand and supply trends by constantly collecting, sharing and processing a huge amount of information by adopting ICT.

Two main characteristics of tourism industry is heterogeneity and complexity that increases the interconnectivity between the tourism firms and the stakeholders (Cooper, 2006; Frew, 2000; Sheldon, 1997). This nature of the tourism products makes the service providers and the tourism firms to rely on one another for inter-connectivity and mutual co-ordination to identify the needs of customers and reach the potential clients with complete personalized information. Therefore, the firms need to adopt ICT adoption cope with organisational transformation.

Significant importance is given for ICT based research in the tourism context, researchers have explored the benefits and

importance of ICT from the hotel industry perspective. The tour operating industry, has a greater need for information to meet the customer need. They work for synergy with various suppliers and service providers (e.g. airlines, transport service providers, hotels, DMOs and other service providers) for handling their operations. Hence, there is a greater need for the faster and integrated information for better business performance. This paper tries to find out the ICT usage and its impact on business operations from the employee perspective.

Generally, research has been carried out in the overall adoption of ICT in tourism and hospitality industry. This paper aims at finding the level of ICT adoption in tour operations, and the relationship between the ICT applications and tools with the business functions.

2. Review of literature

A body of literature review was followed to get insights for the present study. The background of the study were based on the ground-breaking researches conducted from the early 90s to recent times across the world.

2.1 ICT: Conceptualization and Definitions

The day to day business activities requires the adoption of ICT. Buhalis (1998) defines that "ICT is a collective term given to the most recent developments on the mode (electronic) and the mechanisms computers and communication technologies) used for the acquisition, processing analysis, storage, retrieval, dissemination and application of information". It is also viewed as "collection of technological capabilities and tools that capture, store and share knowledge" (Grover & Davenport, 2001). It includes "the entire range of electronic tools, which facilitate the operational and strategic management of organisations by enabling them to manage their information, functions and processes as well as to communicate interactively with their stakeholders for achieving their mission and objectives" (Buhalis, 2003). "ICTs are becoming a holistic

integrated networked equipment and software, which enables effective data processing and communication for organisational benefit" (Law et al., 2009). Therefore, ICT is a collection of digital tools and applications that facilitates the business functions and processes, paves way for improved organisational performance.

2.2 Integration of ICT with the business process and functions

The ICT has become instrumental for national, regional and global development. The penetration of ICT in the tourism is diffused that no player can escape its impact (Buhalis, 1998). The adoption of the ICT in business has several advantages. ICT helps the firm in maintaining its competitive position (Buhalis & Law, 2008). It also plays a major role in maintaining the strategic position of the firm through providing tools and applications for differentiation and maintaining the cost advantage (Buhalis & Licata, 2002). A few other advantages are cost reduction (Buhalis, 2000; Connolly, Olsen, & Moore, 1998), minimizes the switching costs and increases the efficiency and effectiveness of production (Kim, Nam, & Stimpert, 2004), increased transparency in business (Buhalis, 2003) and improved the interconnectivity and interactivity through re-engineering the products and services. Looking from the customer's perspective ICT provides customers with large amount of information on the service attributes, increases the customization of the products, saves time and reduces the human interaction with the retail organisation (Díaz et al., 2015).

Early research studies focused on the contribution of ICT for the strategic and the operations management of tourism firms. Law & Jogaratnam (2005) advocates that the technological can be an effective part of strategic management only when the managers make full use of it. The traditional tourism firms, have re-engineered their operations and distribution channels by adopting ICT in their business (Buhalis & Law, 2008). Tourism industry has witnessed a whole new system of ICTs and Internet facilitating both consumers and service providers throughout different sectors (Buhalis, 2003; Buhalis & Law, 2008). ICTs connected through the Internet have been used in areas of operation, production, marketing, communication among suppliers and intermediaries, interaction among consumers & between consumers and marketers.

During initial stages of marketing evolution the communication used to serve for and directed towards mass people for marketing of products and services (Olkkonen, Tikkanen, & Alajoutsijärvi, 2000). With the introduction of Information and Communication Technologies (ICT's) in business, it brought a great change in the marketing processes as we see it today. According to Law et al (2009) from a supplier's point of view, ICTs play a very crucial role in online marketing through the adoption of specialized tools for CRM (Customer Relationship Management) and RM (Relationship

Marketing). ICT is also major contributor to the development of firms by developing the knowledge base that improves the management and performance of marketing functions (Schertler & Berger-Koch, 1999). ICT is useful for market information search and to create long term customer relationships (Moen. Ø., Madsen. T. & Aspelund. A. 2008). The marketing information and intelligence systems is said to substantially enhance the customer service and the marketing effectiveness. Later, the tourism organisations started using the internet, www and the web 2.0 for their organizational functions .Yoo & Gretzel (2010) discussed the changes in the marketing functions as a result of adopting of Web. 2.0 technologies. In short, ICT offer faster and prompt two way communication between a consumer and marketer with the usage of Web 2.0.

Similarly, ICT has also brought significant changes in the reshaping the distribution channel by improving the interconnection and interaction between the interest groups (Berne, Garcia-Gonzalez, & Mugica, 2012; Kim et al., 2004; Buhalis, 2003) According to Díaz et al., (2015) the firms who have engaged in inter-firm information distribution, ICT plays a major role in extending its support to achieve competitive advantage. For a tourism firm, ICT integrates the relationship with the other firms that operate horizontally and vertically. Further a strong literature base has proved that there is a positive relationship between the electronically supported functions and the supply chain on the business performance. The transparency and the interconnectivity among firms promotes the mass customization of tourism products that increases the value of the product (Buhalis & Law, 2008). ICT adoption have transformed the structure of the value chain and has eliminated restrictions on the agents to perform only certain functions and altering the barriers to entry by restricting the access (Berne et al., 2012). At present, the tourism distribution systems follows a trend that is marked by the proliferation of the online channels which has resulted in business restructuring, altered the power of participants in the channels (Berné, García-González, García-Uceda, & Múgica, 2015) .

The introduction of CRS and the GDS has made the reservation and booking operations easier (Sheldon, 1997). It has increased the transparency, led to convenient access and comparison of information (Buhalis, 1998). Implementation of Computer Reservation Systems (CRSs) in 1970s, Global Distribution Systems (GDSs) in 1980s and Internet in 1990s has transformed the tourism business (Buhalis & Law, 2008, Buhalis, 2003). According to Mihajlović (2012) the scope of ICT is expanded to integration of buying experience, delivery choices, finance etc., in addition to the buying process.



(Source: Adapted from Buhalis, 1998)

2.3 ICT tools

The tourism industry heavily depends upon the description, presentation and the representation of the information made by the service providers to meet their business and customer needs (Buhalis, 2000). It uses a wide range of tools and applications for its business function as there an extensive exchange of information between the actors. In the literature, plethora of ICT tools have been identified and used widely. According to Ezzine (2007) many categories of ICT technologies are used in the service sector that are used for the dissemination of information across the stakeholders and has classified the ICT tools based on the purpose and usage. Sher & Lee (2004) has listed the IT tools that could be used in

hospitality industry. The author further mentions that basic infrastructure like LAN and internet connectivity is essential for optimized function of the IT tools. With the increased diffusion of internet and www in the tourism sector, the use of web 2.0 for the operations has becoming common. The web 2.0 tools depend on the internet for the transfer of information and they are generally perceived as the second generation of the web-based platforms. They are generally used for the online collaboration and the user generated information sharing (Matuszak, 2007; Shiels, McIvor, & O'Reilly, 2003). Specific studies deals with the web 2.0 tools(Sigala & Chalkiti, 2014; Sian Lee & Kelkar, 2013; Sophia van Zyl, 2009) The table given below has the summary of the ICT tools in the literature.

Table 1: Summary of ICT tools

Author(s)	ICT tools
Egbu & Botterill,	Telephone, Internet, Intranet, e-bulletin boards, Groupware, Video-conferencing.

(2002)	
Sher & Lee, (2004)	Employee competence database, Groupware for Discussion, Expert network, Case-based experience database, E-mail, Documentation management, On-line knowledge searching, Data warehousing, Workflow, Decision support system, Enterprise portal site, Teleconferencing, Exogenous professional database and Enterprise resource planning.
Ezzine (2007)	Tablet, Desktop and Laptop PC, e-journals, e-books, e-journals, e-mail, search engines, online data storage, learning management systems, Office suite, course specific software, digital media, video calls, wikis, blogs, Social Media, projectors and printers.
Sophia van Zyl (2009)	Blogging, Wikis, Social bookmarking, Tagging, Really simple Syndication, Collaborative real time editor.
Okumus (2013)	Employee competency database, Decision support tools, video conferencing, teleconferencing, data mining, groupware for discussions, expert network, case-based experience database, e-mail, documentation management, online knowledge searching, data warehousing, online training and learning, workflow, enterprise portal site, search engines, exogenous professional database, enterprise resource planning, supply chain management, customer relationship management, revenue management.
Sian Lee & Kelkar (2013)	Blog, E-mail, E-collaborative systems, E-forums, E-Learning/ Online training, Information repository, Instant Messaging, NetMeeting, Telephone/audio conferencing, People finder, Podcast, videoconferencing, Wiki.
Sigala & Chalkiti (2014)	Social networks, Blogs, Microblogs, Wikis, Content sharing platforms, Text/audio/video sharing platforms.

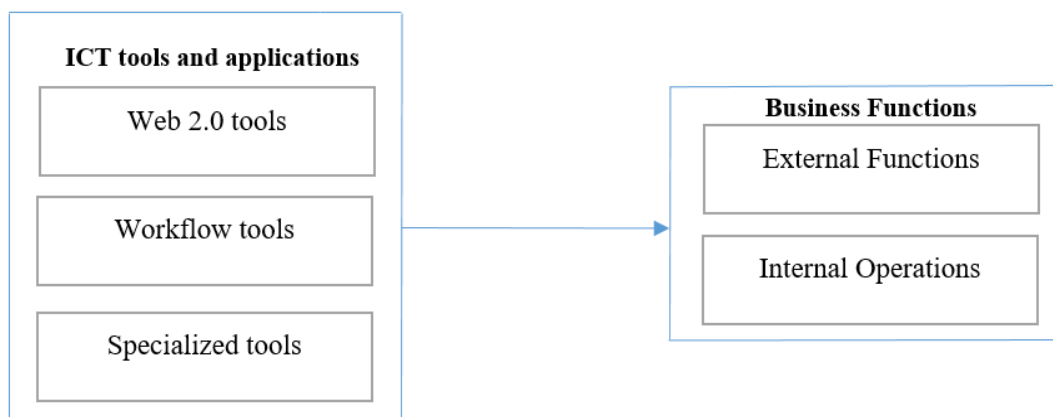
3. Research framework and methodology

The literature review has helped in the identification of suitable factors for the study. With the help of identified factors a research hypothesis is framed.

H1: There is a positive relationship between the application of ICT tools and business functions in tour operations.

3.1 Instrument development

In order to measure the research constructs, a survey instrument is designed and adopted from the studies conducted by (Sigala & Chalkiti, 2014; Okumus, 2013; Sian Lee & Kelkar, 2013, Ezzine 2007). There are empirical evidences that shows that adoption of ICT tools in business functions and process enhances the business performance .The study tries to identify the level of association between the ICT tools and the business functions in the tour operating domain. The conceptual framework for the study is based on the literature review is given below.



(Figure 1: Conceptual framework)

The preliminary study has been conducted in Chennai, to study the role of ICT in the tour operations and its level of usage in their business functions. The questionnaire was used to get appropriate results with response on the role of ICT in tour operating firms. The results are found to be important in understanding the role of ICT in improving the competitiveness, performance and development of the tour operating business. The research questions were formulated in a way to obtain a greater concentration of good responses from the respondents. Hence, closed-ended questions were chosen for the study. The questionnaire was also simplified to reduce the level of complexity and chances of ambiguity.

4. Data Collection and Sampling

The data was collected through a web-based survey. The questionnaire was pre-tested by two academicians and seven industry practitioners to check its content reliability and usability. Based on their feedback, minor changes were recommended to make the questionnaire easy for understanding.

For defining a finite sample size for the study, only the tour operators who are recognized by the Ministry of Tourism, Govt. of India were selected. The M.O.T. has categorized the tour operators in five broader classifications. They are domestic, adventure, inbound, travel transport tour operators and travel

agents. Out of 74 total firms in Tamil Nadu, the sample frame included the 48 firms that operated from Chennai. However, the eight firms listed in the tourist transport operations were excluded as those firms did not focus on tour operations.

Sl. No	Type of Operation	Number of firms
1	Domestic	6
2	Inbound	11
3	Travel Agents	23

(Source: Ministry of Tourism, Govt. of India)

The questionnaire was distributed to the tour operating professionals of tour operating firms (also to the travel agents who did tour operations) in Chennai which are recognized by the Ministry of Tourism, Govt. of India. The questionnaire was mailed to the above tour operating firms, in which the authors had requested the firms to circulate the questionnaire among their employees. In a two month period, One hundred seventy eight responses were received. After excluding the incomplete responses, 154 usable questionnaire were used for data analysis.

4.1 Data Analyses

The research instrument is divided into three main sections for collecting the information about: (a) the respondents' and the organisational profile of the respondents (Table 2 & 3) (b) the respondents' usage of various ICT tools (Table 4) and (c) the integration of ICT with various business functions in tour operations (Table 5).

Based on previous studies, a list of ICT tools used in tourism and hospitality were identified. After a preliminary discussion with the industry practitioners, the list of tools and applications used in tour operations were chosen for the study. Totally 19 items were selected on the basis of its interface and functions and applications for performing the daily routine. Similarly, 16 items were chosen that measures the different functions of tour operations.

The Table 2 portrays the respondents' profile of the respondents that includes their gender, educational qualification, area of specialization and years of experience. Most of the respondents were male (74.1%) followed by (25.9%) of female. Around 61 % of the respondents were between the age group of 18-25 years, followed by 33.8% of the respondents between the age group of 26-33 years. Very less number of respondents (5.2%) were in the age group of 34-41 years. About (83.1%) of the respondents had their education in the field of tourism. The sample represents a have less than three years of experience (71.4%), followed by (20.8%) of the respondents with 4-7 years of experience. Only (7.8%) of the respondents 8-11 years of experience.

Table 2: Respondents' profile

Characteristics	N	%
Gender		
Male	114	74.1
Female	40	25.9

Total	154	100%
Age		
18-25	94	61.0
26-33	52	33.8
34-41	8	5.2
Total	154	100%
Education Level		
Higher Secondary	2	1.3
Certificate/Diploma	18	11.7
Graduate	8	5.2
Post Graduate Degree	126	81.8
Total	154	100%
Tourism Background		
Yes	128	83.1
No	26	16.9
Total	154	100%
Organisational Tenure		
Less than 3 Years	110	71.4
4-7 Years	32	20.8
8-11 Years	12	7.8
Total	154	100%

The Table 3 depicts the organisational profile of the respondents. The respondents were from those firms who worked for medium-sized (23.4 % having 100-499 employees) to large size firms (46.8% having 500-100 employees and above). More than three-fifth of the firms (66.3%) have their branches across the country and world. A sizeable population represented the professionals who were from the lower pyramid of the organisational structure (57.2% until executive level) and a substantial sector of the professionals who worked in the operations (57.1 %) and sales positions (31.2%). Although, around half of the firms concentrated on all types of travel (53.2%), there were specialized tour operators who offered specialized travel services like MICE (8%), business (11.7%). A few tour operators concentrated on the specialized eco, adventure and wildlife tourism (6.5%).

Table 3: Organisational profile of the respondents

Characteristics	N	%
Organisational size		
5-19 Employees	18	11.7
50-99 Employees	28	18.2
100-199 Employees	20	13.0
200-499 Employees	16	10.4
500-999 Employees	30	19.5
1000 Employees and Above	42	27.3
Total	154	100%
Number of Branches		

Only one branch	42	27.3
Another branch in same city	2	1.3
Branches only in Region	8	5.2
Branches across country	52	33.8
Branches across the World	50	32.5
Total	154	100%
Organisational Position		
Operational Level	66	42.9
Executive Level	22	14.3
Supervisory or Middle Level	56	36.4
Top Level	10	6.5
Total	154	100%
Nature of Business		
Leisure	36	23.4
MICE	8	5.2
Business	18	11.7
Others	10	6.5
All the Above	82	53.2
Total	154	100%
Department		
Operations	88	57.1
Training	6	3.9

Products	4	2.6
Support	2	1.3
Client Integration	2	1.3
Sales	48	31.2
Finance	2	1.3
IT	2	1.3
Total	154	100%

4.2 ICT usage in tour operations: reliability analyses

4.2.1 ICT use for business activities

The findings show that the adoption of ICT among the professionals for their business operations. It reveals that specialized applications for programming and designing were less used, while the search engines, reservation tools such as CRS and GDS and E-mail represent the frequently used ICT tools. Overall, the adoption of ICT in tour operations among the respondents were good. There was respondent reporting the use of none ICT tools.

The extent of usage of CRS and GDS seem to be more frequent. The extent of the use of the workflow based applications for the purpose programming and the designing were less used. Thus the respondents tend to use web 2.0 tools and applications (such as search engines, E-mail, blogs and mobile applications) for searching, organising, storing and retrieving the travel and other information; they also used these dynamic 2.0 tools for sharing and discussing the information with the customers, suppliers and service providers.

Table 4: Use of ICT tools in tour operations

ICT tools used in the business	Mean	SD	Factor Loading
Reservation tools ($\alpha=.780$, total variance explained = 24.455)			
CRS	3.92	1.20	.82
GDS	3.91	1.28	.84
Web 2.0 based tools ($\alpha=.760$, total variance explained =18.106)			
Search Engines	4.30	0.96	.63
E-mail (Chat, Instant Messaging)	3.86	0.91	.65
Mobile Applications	3.55	1.28	.80
Social Media	3.44	1.32	.74
Groupware	3.06	1.01	.69
Blogs	2.91	1.13	.64
Multimedia(audio-visual)	2.57	1.01	.62
Specialized tools ($\alpha=.738$, total variance explained =13.802)			
Information Portals	3.71	1.09	.72
Office Automation tools	3.44	1.21	.70
Programming software	2.40	1.18	.65
Designing software	2.27	1.21	.77

(N=154, the extent of ICT use was measured by a 5 point Likert scale: 1, Never; 5, Always)

Principal Component Analysis:

The findings show the main business functions of tour operations. The mean value for the items fell within the range of 3.55 to 4.42 showing that the ICT was used in almost activities.

Overall, the results of the factor analysis seemed satisfactory, as the measurement items also were loaded strongly into the constructs that they were supposed to measure (factor loading ranging from .62 to .84), the Cronbach's α of the

components has surpassed the threshold level of 0.7 (Nunnally,1978). Sometimes, the reliability coefficient alpha value may decrease to 0.60 (Hair et. al., 1998, pp-124; Robinson, Shaver, & Wrightsman, 1991).The 154 responses were sufficient for conducting the PCA, since the minimum number of responses required was (no of items* 5 responses) that is around 85 (Tabacnick and Fidell, 1996). There are 10 items measuring the extent of ICT usage in the business activities which were found to be reliable in measuring the construct, as

the Cronbach's α was again higher than 0.70. The findings also reveal that a high level of ICT support for the business activities.

4.2.2 Extent of ICT adoption in business operations

Table 5: extent of ICT usage in business activities in tour operations

To which extent do you use the following ICT tools in your workplace for business operations?	Mean	SD	Factor Loading
Internal Functions ($\alpha = .828$, total variance explained = 47.565)			
Integrating Business Units (Branches)	3.55	1.11	.84
Maintaining transactional records	4.04	1.01	.78
Sales activities	4.04	1.00	.73
Determining pricing	4.08	1.03	.70
Measuring tourism demand	4.14	.869	.61
External Functions ($\alpha = .789$, total variance explained = 11.585)			
Receive reservations & booking	4.42	.848	.88
Attract Customers	3.97	1.02	.76
Marketing purposes	4.08	1.02	.67
Find out about business partners	3.73	1.07	.64
Find out about competitors	3.86	.942	.67

(N=154, the extent of ICT use was measured by a 5 point Likert scale: 1, Never; 5, Always)

The 10 items measuring extent of ICT adoption in business operations also found to reliably measure the construct, since the Cronbach's α was higher than 0.6 (Hair et. al., 1998, pp-124; Robinson, Shaver, & Wrightsman, 1991). The findings also revealed that there was a high level of integration of ICT to the business functions, since most of the average scores of the items measuring the ICT operations were higher than the mid-point of the Likert scale (table 5)

4.3 Multiple Regression

Multiple regression analysis predicts the extent to which an independent variable may affect the dependent variable. It also examines the regression coefficients in order to explain and substantiate the theoretical effects of independent variables on the dependent variable (Hair et. al., 1998, pp-166). For Multiple regression analysis variables were defined into dependent and independent variables. Variables were changed into metric variables by computing the mean scores of respondents for

each item with help of SPSS 20 and regression analysis was performed. The residual plots were tested for the purpose of regression applicability.

The linearity, homoscedasticity, independence, and normality of the residuals are checked with help of histogram and scatterplot diagram. After examination of residual plots, regression analysis was performed to check the hypothesis as well as the relationship between multiple independent variables reservation tools, web 2.0 tools and specialized tools and dependent variable business functions.

The Null hypothesis states that:

H1: There is no relationship between workflow tools, web 2.0 tools and specialized tools and business functions.

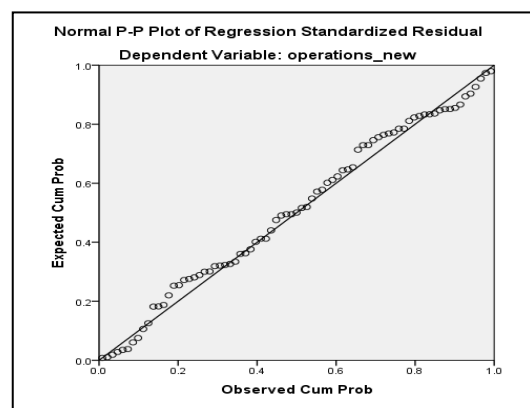
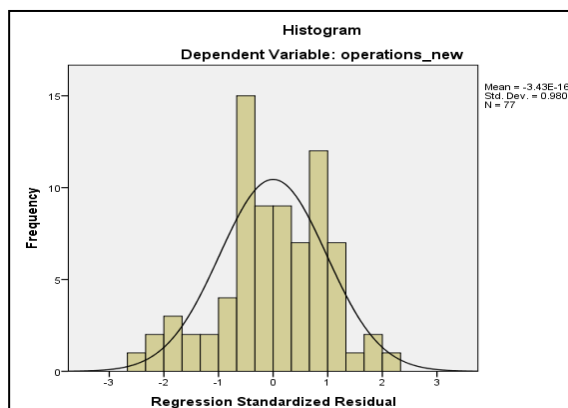


Table: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613a	.375	.350	.57107

R is the correlation, its value is 0.613 and R square is degree of determination, its value is 0.375. Adjusted R square value, 0.350 reveals the explanatory power of independent variables workflow tools, web 2.0 tools and specialized tools

over the dependent variable business functions. From the table it can be understood that business functions can be explained up to 35% by factors workflow tools, web 2.0 tools and specialized tools.

Table: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.305	3	4.768	14.621	.000b
	Residual	23.807	73	.326		
	Total	38.112	76			

The ANOVA table indicates the p-value is less than 0.05 which suggests that the dependent variable business functions

is significantly predicted by independent variables workflow tools, web 2.0 tools and specialized tools.

Table: Regression Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.606	.367		4.376	.000
	Reservation tools	.232	.067	.370	3.453	.001*
	Web2.0 tools	.322	.089	.361	3.616	.001*
	Specialized tools	.235	.082	.293	2.854	.004*

a. Dependent Variable: Operation

*p<.005, significant

Independent variables “Reservation tools”, “Web 2.0 tools” and “Specialized tools” with beta value of 0.370, 0.361 and 0.293 shows highly significant and positive relationship with dependent factor “Business Functions”. Thus, the null hypothesis cannot be accepted. Hence the results shows that

Reservation tools, Web 2.0 tools and specialized tools are highly required to carry out the Business Functions in tour operating firms in Chennai region. The linear multiple regression output equation can be put forward as:

$$\text{Business Functions} = 1.606 + 0.370 \text{ Reservation tools} + 0.322 \text{ Web 2.0 tools} + 0.293 \text{ Specialized tools}$$

5. Findings

In this study, an exploratory research method was adopted to examine the relationship between the ICT tools and the business operations in tour operations. Specifically, the objective was to examine the relationship of the different types of ICT tools with the business functions. The presentations of the findings are as follows:

5.1 Profile of the respondents

The findings of the study show that three fourth of the total respondents were male (74.1%). A majority of the respondents belonged to the age group of 18-25 years which shows that the employees working with the tour operations were relatively young who were adaptable to developing digital applications and technology. Most of the respondents had their post-graduation degree (81.8%) and specialized in the area of tourism (83.1%). The sample represented the employees working at organisations of different size. The organisational size does not influence the adoption of ICT. The firms of all sizes seem to adopt all kind of ICT tools. More than one-third of the employees worked at the operational level followed by employees who worked at the middle level of the organisation. The need for using ICT at the operative level and the middle level is relatively more as they directly interact with customer and work on customizing their needs. More than half of the firms specialized in all kind of tour operations (Leisure, MICE, Business and special interest tours). More than three fourth of

the employees worked from operations and sales department that requires a greater level of ICT integration in their job for effectiveness. It could be inferred that the age, education and the experience level of the respondents would help them to adopt and use ICT at the workplace.

5.2 Use of ICT tools in business functions

ICT changes the way people create, collect, organize and store information. In this vein, adoption of ICT tools shifts the business functions to a technology-centric approach that supports dynamic and collaborative communication and widens the scope of the business functions in the tourism context.

A fair level of ICT adoption was seen among the firms of all sizes. There was no relationship between the size of the organisation and the adoption of ICT tools. However, the usage of blogs and groupware had relatively low usage among the firms. The ICT tools gave three factors with Eigen values greater than 1 were extracted. They were ‘Reservation tools’, ‘Web 2.0 tools’ and ‘Specialized tools’. The business function was divided into two main factors with Eigen value greater than 1 was extracted. They were names ‘External Operations’ and ‘Internal functions’.

The results of multiple regression analysis shows that the business functions of tour operating firms depend on the adoption of ICT tools. The tourism industry is one of the industry

that is too slow in adopting the ICT tools in their business. The top level management should understand the potential benefits of adopting emerging tools and applications in their business have to align them to the business functions for better performance. The management should also provide appropriate orientation and training for their employees to get the maximum benefits.

6. Limitations

The study was conducted in a specific city and time period. The technology based tools and applications advance rapidly as the way in which people interact with the technology also change. Hence, a continuous research is required to understand the dynamic technology- business functions interaction and influence. The sample size was low to understand the adoption of ICT in tour operations. In addition, the findings should also be refined at it should be tested with the respondents' and organisational contexts, as these variables also affect the adoption of the ICT tools and its influence on the business functions.

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